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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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EXAMINER

KANG, D

ART UNIT

PAPER NUMBER

2811

DATE MAILED:

02/14/01

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MM91/0214

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.

09/473,394

Applicant(s)

MISTRY, KAIZAD R.

Examiner

Donghee Kang

Art Unit

2811

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 17 January 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) 10-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are objected to by the Examiner.
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

- 15) ☒ Notice of References Cited (PTO-892)
- 16) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 17) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 18) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 19) ☐ Notice of Informal Patent Application (PTO-152)
- 20) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-9) in Paper No. 6 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

3. Claims 1-3 are rejected under 35 U.S.C. 102(e) as being anticipated by Furukawa et al (US 5,998,835).

Regarding claim 1, Furukawa et al discloses a field effect transistor comprising (Fig. 14):

a substrate having a recess in a surface thereof, the recess having a bottom portion and substantially vertical wall; a gate dielectric layer (330) disposed the bottom portion of the recess and adjacent the substantially vertical sidewalls; a gate electrode (364) overlying the gate dielectric layer; and source/drain terminals (310 & 320) disposed in the substrate in alignment with a pair of laterally opposed gate electrode sidewalls, wherein the source/drain terminal have an extension (315 & 325) which

extends downwardly, from approximately the surface of the substrate, along the sidewalls of the recess.

Regarding claims **2 & 3**, Furukawa et al discloses a portion of the gate electrode overlies an innermost portion of the source/drain extension, wherein the gate electrode conforms to the recessed channel.

4. Claims **4-6** are rejected under 35 U.S.C. 102(b) as being anticipated by Hwang (US 5,567,966).

Regarding claim **4**, Hwang discloses a field effect transistor comprising (Fig. 6):
a substrate having a recess in a surface thereof, the recess having a bottom portion and tapered sidewalls, the tapered sidewall surface forming an obtuse angle with respect to the bottom portions of the recess; a gate dielectric layer disposed the bottom portion of the recess and adjacent the tapered sidewalls; a gate electrode overlying the gate dielectric layer; and source/drain terminals (24) disposed in the substrate in alignment with a pair of laterally opposed gate electrode sidewalls, wherein the source/drain terminal have an extension (22) which extends downwardly, from approximately the surface of the substrate, along the sidewalls of the recess.

Regarding claims **5 & 6**, Hwang discloses a portion of the gate electrode overlies an innermost portion of the source/drain extension, wherein the gate electrode conforms to the recessed channel.

5. Claims 7-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Kim et al (US 5,712,503).

Regarding claim 7, Kim et al discloses a field effect transistor comprising (Fig. 5I):

a substrate having a recess in a surface thereof, the recess having a curvilinear recess; a gate dielectric layer (82) disposed the curvilinear recess; a gate electrode (83) overlying the gate dielectric layer; and source/drain terminals (85) disposed in the substrate in alignment with a pair of laterally opposed gate electrode sidewalls, wherein the source/drain terminal have an extension (81) which extends downwardly, from approximately the surface of the substrate, along the curvilinear sides of the recess.

Regarding claims 8 & 9, Kim et al discloses a portion of the gate electrode overlies an innermost portion of the source/drain extension, wherein the gate electrode conforms to the recessed channel.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Donghee Kang** whose telephone number is 703-305-9147. The examiner can normally be reached on Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Thomas can be reached on 703-308-2772. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

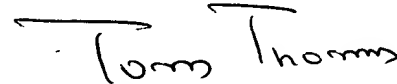
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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

DHK
January 30, 2001

A handwritten signature in cursive script that reads "Tom Thomas".

TOM THOMAS
SUPERVISORY PATENT EXAMINER